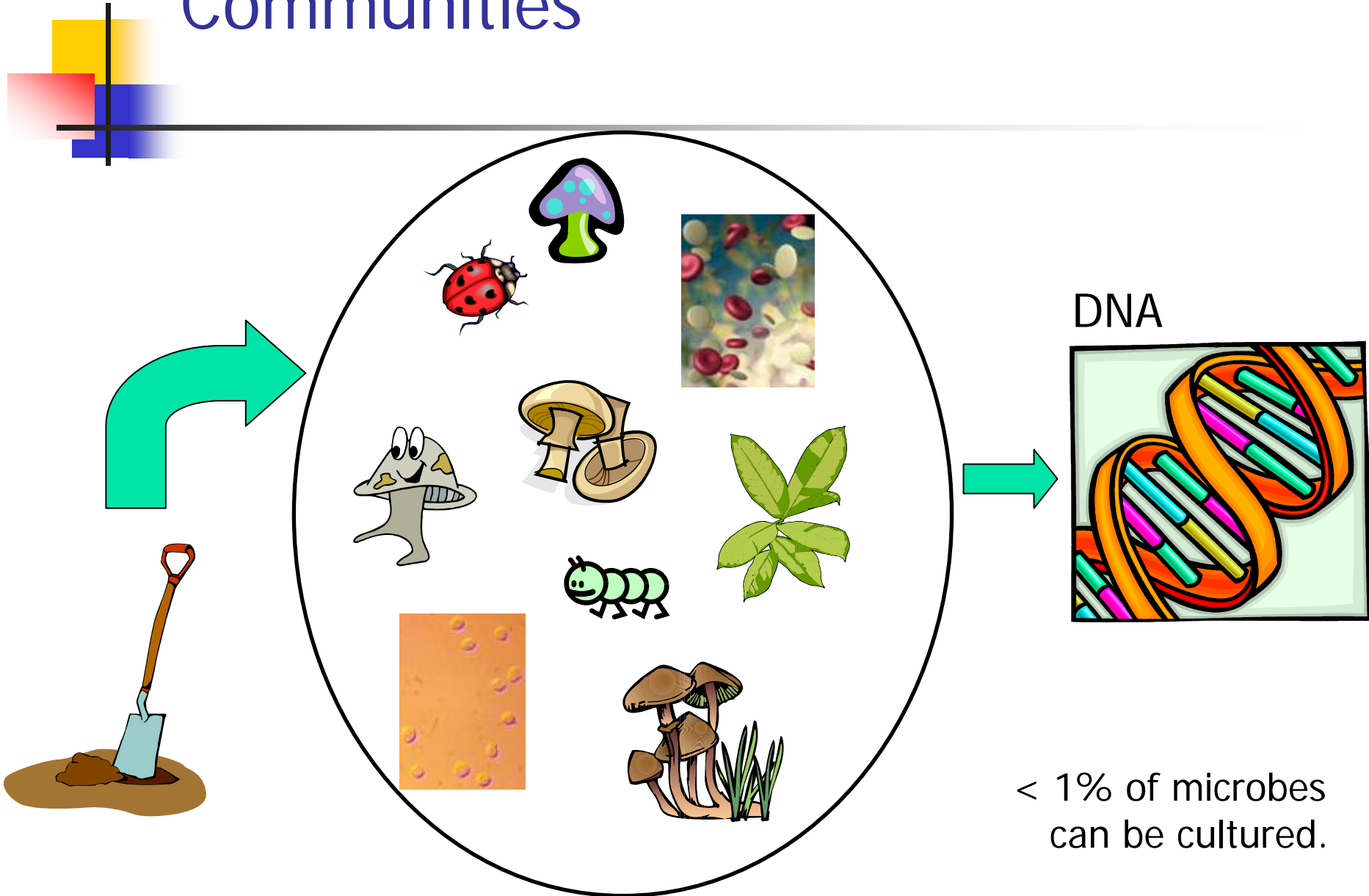


Effects of Cover Crops on Soil Fungal Diversity and Biomass



Daniel K. Manter and Jorge A. Delgado
USDA-ARS, Soil-Plant-Nutrient Research, Fort Collins, CO
Merlin Dillon and Samuel Essah
Colorado State University, SLVRC, Center, CO

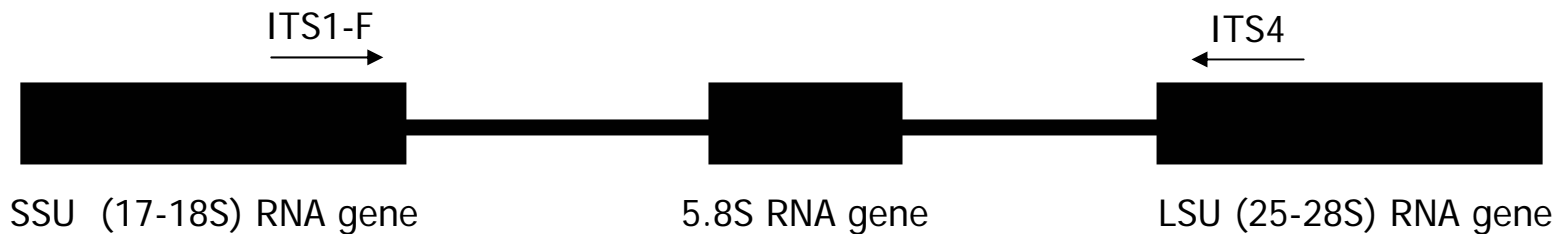
Analysis of Soil Microbial Communities



DNA

<math>< 1\%</math> of microbes
can be cultured.

Nuclear Ribosomal RNA Genes (1 repeat)

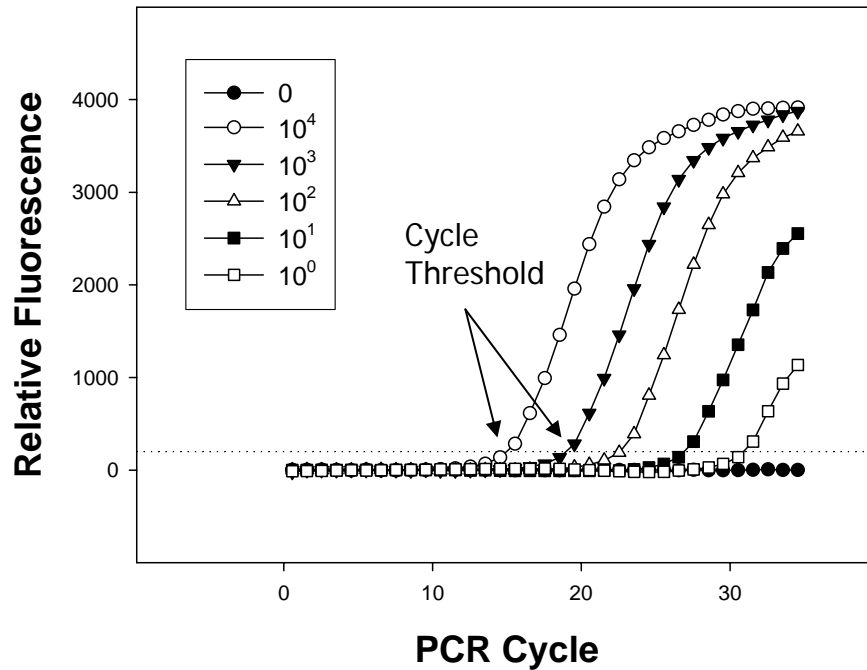


ITS1-F & ITS4 primers

- present in fungi only
- DNA may vary in length or sequence
- Based on 261 sequences in Genbank
 - lengths range from 420 to 825 bp
 - < 2 species / fragment

Analysis of Fungal Communities

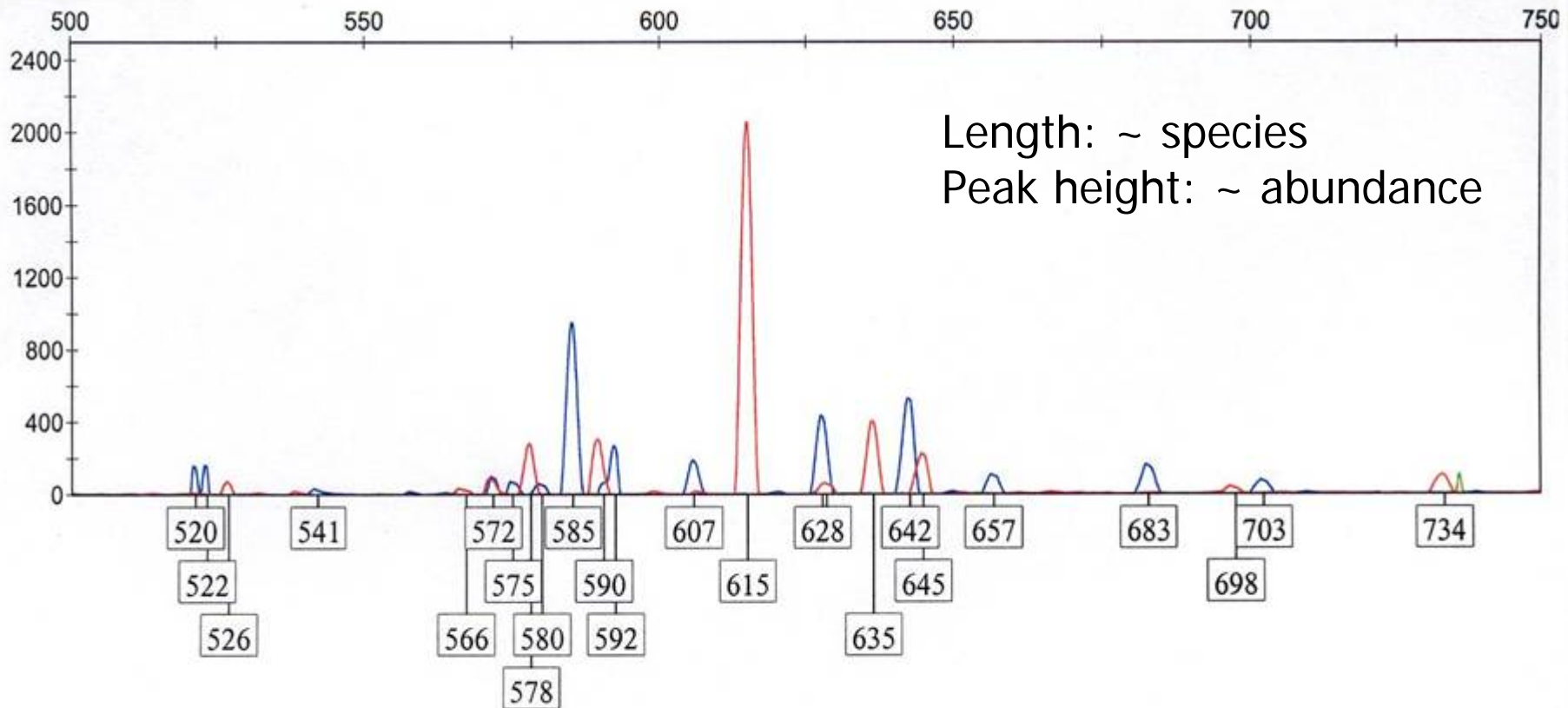
Step 1: qPCR



Total fungal biomass (DNA) in a soil sample is estimated from qPCR.

Analysis of Fungal Communities

Step 2: Separate PCR products by length



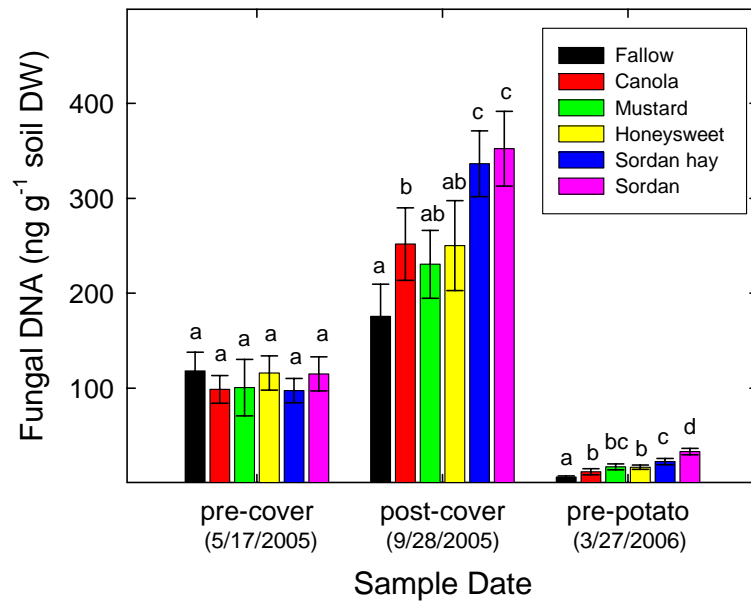
Cover crop treatments

- Fallow
- Canola
- Mustard
- Sorghum sudan 'Honeysweet'
- Sorghum sudan hay
- Sorghum sudan

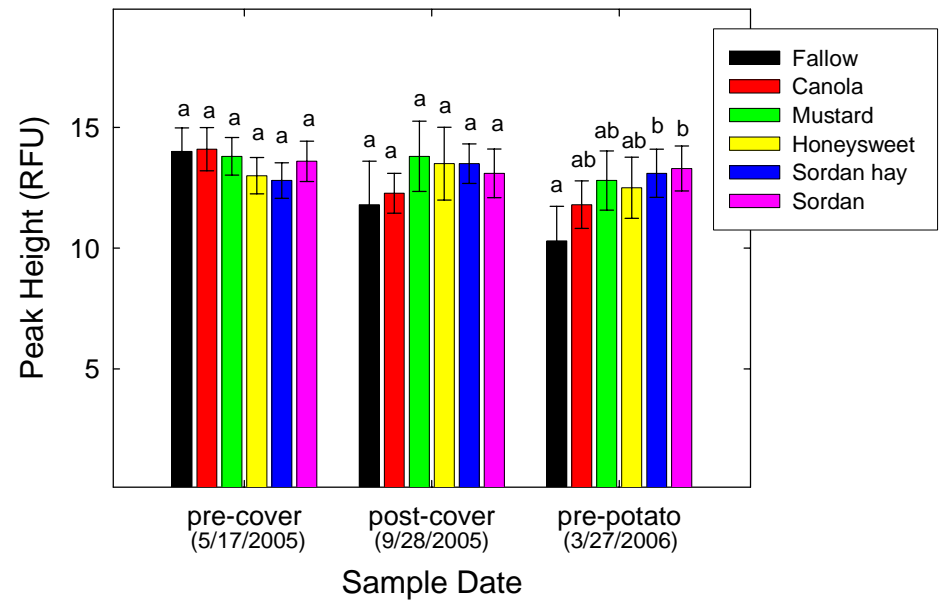


Total Fungal Biomass and Diversity

Fungal Biomass

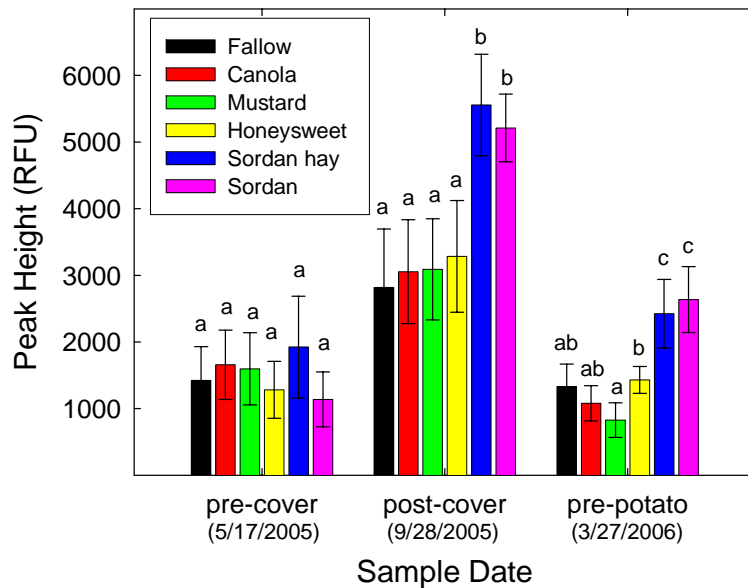


Species Richness

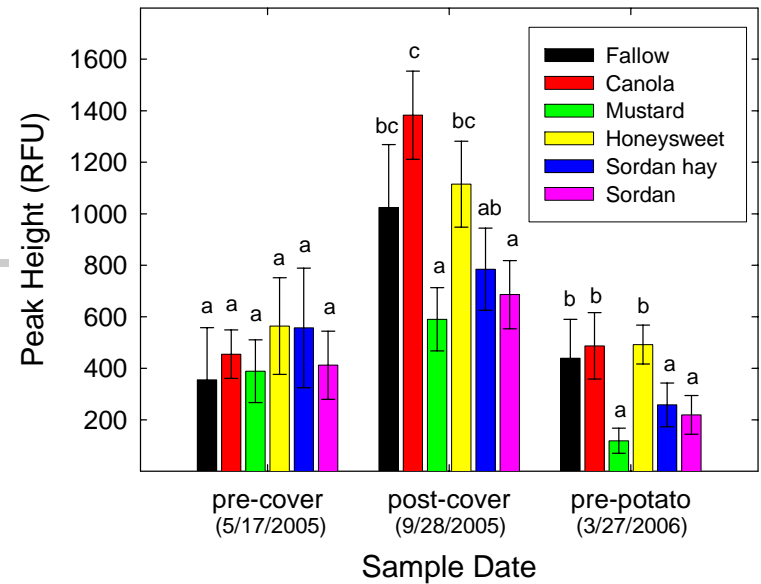


Effects on Individual Potato Pathogens

Fusarium equiseti



Verticillium sp.



Alternaria solani

